REMARKS

Claims 23-54 are pending. Claims 30, 39, 46, and 53 have been amended to recite "produced by a recombinant cell." Support for the amendment to the claims can be found in the specification, for example, at paragraph [0100], and at paragraphs [0118] to [0156]. Accordingly, no new matter has been introduced.

I. Rejection Under 35 U.S.C. § 112, First Paragraph

A. Enablement

The Examiner has rejected claims 41-54 under 35 U.S.C. § 112, first paragraph, as allegedly failing to "reasonably provide enablement for a fragment of 30-50 contiguous amino acids of SEQ ID NO:2." More specifically, the Examiner alleges:

> [t]he claims are drawn to a fragment of the amino acid sequence of SEQ ID NO:2. Claims 41-54 are overly broad since insufficient guidance is provided as to which of the myriad of variant polypeptides will retain the characteristics of CCIII. The claims are drawn to variant polypeptides. However, Applicants do not disclose any actual or prophetic examples on expected performance parameters of any of the possible muteins of human CCIII ... given the art recognized unpredictability of the effect of mutations on protein function, it would require undue experimentation to make and use the claimed invention.

Office Action, at pages 2-5.

Applicants respectfully disagree and traverse the rejection.

Preliminarily, Applicants respectfully point out that pending claims 41-54 are directed to fragments of the polypeptides disclosed in the instant application. Indeed, independent claims 41 and 48 recite polypeptides "consisting of a fragment of" SEQ ID NO:2 and the amino acid sequence encoded by the deposited clone, "wherein said fragment is at least 30 contiguous amino acids in length." Thus, contrary to the Examiner's assertions, the instant claims are directed not to variants of the polypeptides of the invention, but rather specific fragments. Therefore, the Examiner's reliance on the alleged "myriad of variant polypeptides" of the claimed invention, performance parameters of "possible muteins" of the invention, and alleged "unpredictability of the effect of mutations on protein function," is incorrect, as the claims do not recite the variants or mutations alleged by the Examiner. Indeed, the examples provided by the Examiner are all related to mutations of one amino acid to another, and thus are not relevant to the scope of the instant claims.

Moreover, to the extent that the Examiner is implying that the claims require the claimed polypeptides to retain the biological activity of CCIII, Applicants respectfully disagree. Nothing in the instant claims requires that the claimed polypeptides retain such activity, and the Examiner has not provided any support for such an interpretation of the instant claims. It is improper to read a limitation into a claim from the specification. *See, e.g.,* M.P.E.P. § 2111 at 2100-36 to 37; *In re Van Geuns*, 988 F.2d 1181, 26 U.S.P.Q.2d 1057 (Fed. Cir. 1993). Applicants emphasize that the specification does enable the use of the claimed polypeptides that retain the biological activity of CCIII. However, Applicants further emphasize that the instant specification describes and teaches uses of the claimed polypeptides that do not require such activity, for example, as an immunogen to produce antibodies to particular portions of CCIII. *See, e.g.,* paragraphs 174-175. Thus, since the instant claims do not contain any limitation requiring the biological activity of CCIII, whether the polypeptides retain such biological activity or not is irrelevant, so long as the specification enables a person of ordinary skill in the art to practice a single use of the claimed polypeptides, such as to raise antibodies to particular portions of CCIII, without undue experimentation. *See, e.g.,* M.P.E.P. § 2164.01(c).

It is well settled that the test for enablement is whether one reasonably skilled in the art could make and use the invention, without undue experimentation, from the disclosure in the patent specification coupled with information known in the art at the time the patent application was filed. *See U.S. v. Telectronics, Inc.,* 857 F.2d 778, 8 U.S.P.Q. 2d 1217 (Fed. Cir. 1988). Under 35 U.S.C. § 112, enablement is not precluded even if some experimentation is necessary. *See Hybritech, Inc. v. Monoclonal Antibodies, Inc.* 802 F.2d 1376, 1384 (Fed. Cir. 1986). This is so even if the amount of experimentation required is laborious. *See In re Wands*, 858 F.2d 731 (Fed. Cir. 1988). Furthermore, enablement is not precluded even if some embodiments of the claimed invention are inoperative. Indeed, the M.P.E.P. states that "[t]he presence of inoperative embodiments within the scope of a claim does not necessarily render a claim nonenabled." M.P.E.P. § 2164.08(b).

Applicants assert that the Examiner has underestimated the level of skill of the skilled artisan, and that the skilled protein chemist or molecular biologist, enlightened by the teachings of the present specification, is more than capable of routinely determining whether a polypeptide encompassed by the claims can be used as an immunogen to produce antibodies to CCIII and/or retains the biological activity of CCIII. Because of: (1)

the availability of routine techniques for synthesizing peptides; (2) the knowledge of the amino acid sequence of SEQ ID NO:2; (3) the availability of routine techniques for assaying for immunogenicity and biological activity of the claimed polypeptides; (4) the high level of skill in the field of protein chemistry, immunology, and molecular biology; and (5) the direction and guidance provided by the specification regarding the claimed polypeptides and uses thereof, one skilled in the art could routinely generate the claimed polypeptides and confirm that they can be used as an immunogen to produce antibodies to CCIII and/or retain the biological activity of CCIII. Accordingly, one reasonably skilled in the art, armed with the disclosure in the present specification coupled with information known in the art at the time the application was filed, could make and use the claimed polypeptides, without undue experimentation. Therefore the claimed polypeptides are fully enabled within the meaning of 35 U.S.C. §112.

In view of the above remarks, Applicants believe the Examiner's concerns have been fully addressed. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection of claims 41-54 under 35 U.S.C. § 112, first paragraph, for lack of enablement.

B. Written Description of Claims 41-54

The Examiner has rejected claims 41-54 under 35 U.S.C. § 112, first paragraph, as allegedly "containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention." More specifically, the Examiner alleges:

> [t]hese are genus claims because the claims are thus directed to variant polypeptides ... [s]ince the disclosure fails to describe the common attributes or characteristics that identify members of the genus, and because the genus is highly variant, SEQ ID NO:2 is insufficient to describe the genus ... [t]hus applicant was not in possession of the claimed genus.

Office Action at pages 5-6.

Applicants respectfully disagree and traverse this rejection.

As noted above, pending claims 41-54 are directed to polypeptides "consisting of a fragment of" SEQ ID NO:2 and the amino acid sequence encoded by the deposited clone, "wherein said fragment is at least 30 contiguous amino acids in length," not variants. The

genus encompassed by such closed language is thus not "highly variant" as asserted by the Examiner. Moreover, all of the members of the genus share the common structural feature of the exact amino acid sequence of a portion of SEQ ID NO:2 (or the polypeptide encoded by the deposited clone) of at least 30 or 50 amino acids in length, and thus the members of the genus share common structural attributes. Further, the Examiner has asserted on page 6 of the action that "[s]tructural features that could distinguish the compounds in the genus from other seven transmembrane region compounds are missing from the disclosure," but the instant invention is a cytokine, not a 7TM receptor. In light of the differences between the pending claims and how they are described by the Examiner, Applicants respectfully request that the Examiner clarify the basis for the instant rejection in the event that it is maintained after consideration of the instant response.

In an analysis of written description under 35 U.S.C. § 112, first paragraph, the Examiner bears the initial burden of presenting a *prima facie* case of unpatentability, which requires that the Examiner present evidence or reasons why one skilled in the art would not reasonably conclude that Applicants possessed the subject matter as of the priority date of the present application. *In re Wertheim*, 541 F.2d 257, 262, 191 U.S.P.Q.2d 90, 96 (C.C.P.A. 1976); M.P.E.P. § 2163.04. Furthermore, as the Federal Circuit has noted, when determining possession of claimed subject matter "the issue is whether one of skill in the art could derive the claimed ranges from the patent's disclosure." *Union Oil Company of California v. Atlantic Richfield Company*, 208 F.3d 989, 54 U.S.P.Q. 2d 1227 (Fed. Cir. 2000) (emphasis added). In the instant case, Applicants maintain that the Examiner has not met the required burden.

It is well established that a "gene is a chemical compound, albeit a complex one". *Amgen, Inc. v. Chugai Pharamceutical Co., LTD.*, 927 F.2d 1200, 1206 (Fed. Cir. 1991). Thus, the instant claims, directed to particular polypeptide fragments of the disclosed CCIII protein, are essentially chemical claims involving generic chemical formulae. As stated by Judge Lourie in *University of California v. Eli Lilly*, 119 F.3d 1559 (Fed. Cir. 1997), "In claims involving chemical materials, generic formulae usually indicate with specificity what the generic claims encompass. One skilled in the art can distinguish such a formula from others and can identify many of the species that the claims encompass." All of the objectives met by a generic chemical formula are similarly met by the explicit description in the instant specification of a polynucleotide sequence (*i.e.* SEQ ID NO:1),

the amino acid sequence encoded thereby (SEQ ID NO:2), and by the instant claims to polypeptides "consisting of a fragment of" SEQ ID NO:2 and the amino acid sequence encoded by the deposited clone, "wherein said fragment is at least 30 contiguous amino acids in length." That is, the instant claims clearly distinguish the boundaries of the claimed genera and identify all of the members of those genera. Accordingly, one skilled in the art would reasonably conclude that Applicants had possession of the polypeptides encompassed by the rejected claims upon reading the present application as filed, and would immediately recognize that the Applicants had "invented what is claimed." *Vas-Cath*, 935 F.2d at 1563. Therefore, the specification contains an adequate written description of the claimed polypeptides. Applicants have provided the skilled artisan with a "generic formula" in the form of the amino acid sequence of SEQ ID NO:2, which indicates "with specificity what the generic claims encompass." *Id.* Armed with this information "one skilled in the art can distinguish such a formula from others and can identify many of the species that the claims encompass." *Id.*

Furthermore, the specification particularly discloses embodiments of the invention rejected by the Examiner in the present action. Polypeptides consisting of at least 30 or at least 50 amino acid residues of SEQ ID NO:2 are disclosed, for example, at paragraphs [0097] and [0110]. Accordingly, one skilled in the art, enlightened by the teachings of the present application, could readily envision each of the amino acid sequences of the specified polypeptides. For example, the skilled artisan could clearly envision each of the claimed polypeptide fragments with at least 30 contiguous amino acids of the defined amino acid sequence as a progression, *i.e.*, polypeptides having amino acids 1-30, 2-31, 3-32, etc. The skilled artisan could certainly further envision sequentially adding contiguous amino acids to either end of any of the described embodiments, or making N and/or C terminal deletions to the disclosed full length or mature polypeptides. Indeed, nothing more than what is described in the specification would be required for the skilled artisan to identify every single one of the polypeptides and polypeptide fragments containing at least 30 amino acids of SEQ ID NO:2 or encoded by the cDNA contained in ATCC Deposit No. 97406. Thus, it would be readily apparent to the skilled artisan that the Applicants had "invented what is claimed" (*Vas-Cath*, 935 F.2d at 1563).

Indeed, the Examiner has failed to provide any showing that one skilled in the art would *not* reasonably conclude that Applicants possessed the claimed subject matter as of the priority date of the present application, particularly in light of the differences between

the pending claims and how they are described by the Examiner. The entire claimed genus of polypeptide fragments is described such that a skilled artisan would recognize that Applicants were in possession of the genus. Thus, as the Examiner has not met the required burden of presenting evidence or reasons why those skilled in the art would not recognize the claimed invention from the disclosure, and the specification conveys with reasonable clarity that Applicants were in possession of the claimed invention, the pending claims fully meet the written description requirements of 35 U.S.C. § 112, first paragraph. Accordingly, Applicants respectfully request that the Examiner's rejection of the claims under 35 U.S.C. § 112, first paragraph, be reconsidered and withdrawn.

C. Written Description of Claims 29, 38, 44, and 51

The Examiner has further rejected claims 29, 38, 44, and 51 under 35 U.S.C. § 112, first paragraph, as allegedly "containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention." More specifically, the Examiner alleges:

> [t]he specification as originally filed does not provide support for the invention as now claimed: the protein of claim 23, 32, 41 or 48 fused to polyethylene glycol.

See, Office Action, at page 7. Applicants respectfully disagree and traverse this rejection.

Preliminarily, Applicants respectfully point out that claims 44 and 51 are directed to polypeptides of the invention that are glycosylated, not polypeptides of the invention fused to polyethylene glycol. Applicants believe that the instant rejection was intended to be directed to claims 45 and 52, which are directed to polypeptides of the invention fused to polyethylene glycol. Therefore, Applicants will reply to the instant rejection as it applies to claims 29, 38, 45 and 52.

Applicants respectfully point out that support for subject matter of the rejected claims can be found in the specification as originally filed, for example, at paragraph [0101]. Therefore, claims 29, 38, 45 and 52 do not add new matter. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the present rejection under 35 U.S.C. § 112, first paragraph, for lack of written description.

II. Rejection Under 35 U.S.C. § 112, Second Paragraph

The Examiner has rejected claims 30, 39, 46, and 53 under 35 U.S.C. § 112, second paragraph, as allegedly "being incomplete for omitting essential steps, such omission amounting to a gap between the steps. The omitted steps are: transfection of the cell with the nucleic acid encoding the protein of claim 23, an[d] isolation of the protein." Office Action at pages 7-8.

Applicants respectfully disagree, and maintain that the previously pending claims were complete and definite. However, claims 30, 39, 46 and 53 have been amended herein so as not to recite methods, and to instead recite that the protein "is produced by a recombinant cell." Support for these amendments are found in throughout the specification and claims as originally filed and previously presented. As the claims no longer involve a method, there can be no missing method steps, and thus the Examiner's rejection of these claims as being indefinite has been obviated. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection of claims 30, 39, 46 and 53 under 35 U.S.C. § 112, second paragraph.

Conclusion

In view of the foregoing remarks, applicants believe that this application is now in condition for allowance. The Examiner is invited to call the undersigned at the phone number provided below if any further action by Applicants would expedite the allowance of this application.

Finally, if there are any fees due in connection with the filing of this paper, please charge the fees to our Deposit Account No. 08-3425. If a fee is required for an extension of time under 37 C.F.R. § 1.136, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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